| No. | Section | Section Number | Page | Figure or Table Number | Comment Type (General or Specific) | Comment Subject | Comment |
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| 1 | Revised Arkema Removal Action RAOs | 3.1.2.3 | 3-3 | | Specific | ARARs | As with the Gasco Engineering Evaluation/Cost Analysis (EE/CA) and the draft Portland Harbor Feasibility Study (FS), the removal action objectives (RAOs) have been revised to eliminate the compliance with applicable or relevant and appropriate requirements (ARARs) requirement. Because compliance with ARARs (unless waived) is a threshold criteria under Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), the ARARs requirement is not strictly necessary. However, because the draft Portland Harbor FS is still under review, it is not possible to comment on the removal of the ARAR language at this time. |
| 2 | Portland Harbor RALs | 2.1.3 | 2-3 | | Specific | Benthic Risk Evaluation | Remedial action levels (RALs) for the protection of the benthic community have not been established. EPA expects to provide direction regarding areas within Portland Harbor that pose benthic risk. |
| 3 | AOPC 14-Specific Sediment Quality Guidelines for the Benthic Community | 2.1.4 | 2-4 | | General | Benthic Risk Evaluation | The draft Arkema EE/CA rejects the mean quotient approach for identifying areas of benthic risk as used in the Portland Harbor draft FS and instead develops site specific sediment quality guidelines (SQGs) based on a relationship between sediment chemistry and toxicity in sediment samples collected offshore of the Arkema site.<br><br>The draft EE/CA presents a set of SQGs for the protection of the benthic community. Due to the limited number of chemicals posing risk to the benthic community offshore of the Arkema site, the development of site specific SQGs is feasible. However, the small number of sediment bioassays collected off shore of the Arkema site impart a degree of uncertainty. In addition, the draft EE/CA fails to provide sufficient documentation of the approach used to develop the SQGs. EPA is in the process of finalizing the approach for identifying areas of benthic risk. Once, this approach is finalized, the draft EE/CA should incorporate this approach to determine the extent to which the various removal alternatives are protective of the benthic community within the removal action area (RAA). |
| 4 | AOPC 14-Specific Sediment Quality Guidelines for the Benthic Community | 2.1.4<br><br>Appendix A2 | 2-5 | | Specific | Benthic Risk Evaluation | Site specific sediment quality guidelines (SQGs) for the protection of the benthic community are presented in Appendix A2 of the draft EE/CA. Appendix A2 states that the SQGs were developed based on a predicted reliability of 75 percent. The resultant SQGs (dry weight) are:<br><br>• dichloro-diphenyl-dichloroethane (DDD) – 1,680 µg/kg<br>• dichloro-diphenyl-dichloroethene (DDE) – 750 µg/kg<br>• dichloro-diphenyl-trichloroethane (DDT) – 5,800 µg/kg<br>• Total DDx (total of 2,4'- and 4,4'-DDD, DDE, DDT) – 8,200 µg/kg<br><br>The draft EE/CA states that the "SS-SQGs for AOPC 14 were calculated by plotting the predictive ability of each COPC along the concentration gradient observed in AOPC 14." However, the results of this analysis are not presented. While there may be value in developing site specific SQGs for DDT and related chemicals offshore of the Arkema site, the underlying analysis used to develop the SQGs should be presented. The appendix should include a summary of paired toxicity/chemistry results and a statistical evaluation that considers false positives and false negatives and presents a range of site specific SQGs based on various false positive and false negative rates in order to provide sufficient information for EPA to determine the appropriate cleanup level protective of the benthic community. |

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| 5 | Short-term Effectiveness | 8.1.6 | 8-5 to 8-6 | | General | Construction Sequencing and Durations | Consistent with EPA's preliminary comments on the draft FS, the conclusions regarding the number of construction seasons for the alternatives are based on the current in-water construction fish window. There may be opportunities to modify that window or conduct work in such a fashion that the construction season can be extended. |
| 6 | Monitored Natural Recovery and Enhanced Natural Recovery | 6.2 | | | General | Fate and Transport Model/MNR | The EE/CA borrows approaches from the draft Portland Harbor FS, which is still in a comment phase with the EPA and government team. Probably the most significant example of this is the use of the fate and transport (F&T) model, which appears to predict very favorable "natural burial" of surface sediment. As discussed in the December 18, 2012 letter transmitting comments on the draft Portland Harbor FS to the Lower Willamette Group (LWG), "EPA has identified many concerns related to the MNR modeling and conclusions… U.S. Army Corps Engineer Research and Development Lab recently performed independent model runs linking deposition to hydrodynamics. Based on the Corps modeling runs it appears there is sufficient uncertainty in the LWG model results to conclude that the long-term projections provided…do not accurately predict depositional rates for many areas in the lower Willamette River." The predicted natural recovery leads the EE/CA to conclude that Alternatives 2-5 will achieve RAOs and preliminary remediation goals (PRGs) over time, and that all alternatives have equal and satisfactory long-term effectiveness. EPA intends to use empirical data, and both the Corps' and LWG's modeled results to support the evaluation of alternatives rather than request revision of the LWG's model runs, this includes re-evaluation of the Arkema site. Alternatives will need to be re-evaluated based on EPA's findings. |
| 7 | Nature and Extent of Contamination and Streamlined Risk Evaluation | 2.2 | 2-6 | | Specific | Oregon Hot Spots and PTM | The Arkema EE/CA utilized the draft Portland Harbor FS conclusions regarding the lack of Principle Threat Waste (PTW) or Hot Spots in Portland Harbor. As discussed in the December 18, 2012 letter transmitting comments on the draft Portland Harbor FS to the LWG, "EPA does not agree with the results of the analysis that LWG has provided which ultimately avoids designating any sediment at the site as Principal Threat Waste (PTW) as defined by EPA guidance or Hot Spots as defined by the State of Oregon." The draft Portland Harbor FS also lacked any meaningful analysis of PTW in accordance with the National Contingency Plan (NCP) and CERCLA guidance. LWG was informed in the letter that the Portland Harbor FS should "clearly acknowledge that the documented presence of non-aqueous phase liquids in sediments offshore of the Gasco and Arkema sites indicate that PTW is present at the Portland Harbor Site." As the Arkema EE/CA utilized LWG's conclusions, additional analysis of PTW must be conducted for the Arkema EE/CA. The presence of free product offshore of the Arkema site meets the PTW definition.<br><br>In addition, the Arkema EE/CA must identify high concentration Hot Spots in accordance with Oregon regulations. It is possible that high concentration Hot Spots may exist outside of areas identified as PTW or areas currently designated for active remediation. For example, sediment concentrations within the RAA are far in exceedance of the PRG for total DDE of 8.8 micrograms per kilogram (µg/kg) based on $10^{-5}$ risk level and a 17.5 grams per day (g/day) fish consumption rate, and may qualify as Hot Spots. |
| 8 | Other EPA-Directed COIs | 2.2.3.1 through 2.2.3.5 | | | General | RAOs, RGs and RALs | PRGs were developed in the draft Portland Harbor FS report. The draft Portland Harbor FS is still under review, as are the PRGs, and they may be modified through that process. |